CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 85-70
NPDES NO. CA0028851

WASTE DISCHARGE REQUIREMENTS FOR:

APPLIED MATERIALS, INC.
3050 BOWERS AVENUE FACILITY
CITY OF SANTA CLARA, SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board), finds that:

1. Applied Materials, Incorporated, hereinafter called the discharger, by application dated February 8, 1985, has applied for issuance of waste discharge requirements and a permit to discharge waste under the National Pollutant Discharge Elimination System (NPDES).

2. The discharger operates a manufacturing facility for plasma etchers and chemical vapor deposition equipment used in the semi conductor industry. The 9 acre site is located at 3050 Bowers Avenue in the City of Santa Clara, Santa Clara County, approximately three quarters of a mile south of Routh 101.

3. In September 1983, an investigation program was initiated by the discharger to determine whether or not pollution of soils and groundwater had occurred as a result of leakage from the underground tank area. Reports subsequently submitted to the Board staff documented the presence of various volatile organic compounds in the groundwaters beneath the facility. The predominant contaminant detected is trichloroethane at concentrations up to 14,000 ppb, with lower concentrations of other halogenated hydrocarbons such as dichloroethane, trichloroethylene, dichloroethylene, tetrachloroethylene, chloroform, and Freon 113. Chemical analysis of groundwater samples indicates that the trichloroethane (TCA) has migrated to the northeast to a distance of 700 feet or more and vertically downward to a distance of approximately 50 feet.

4. By letter dated October 10, 1984, the discharger proposed to prevent the further migration of pollutants by means of groundwater extraction and treatment, while continuing to monitor the contaminant plume and to further refine the limits of the contamination. The contaminated groundwater is to be treated by air stripping, followed by discharge to the storm sewer.

5. By letter dated March 5, 1985, the Executive Officer, in order to expedite the cleanup, stated that if the discharger choose to begin discharging treated groundwater prior to issuance of an NPDES permit, that he would not recommend that the Board institute enforcement action providing that the treatment system is monitored and operated so as to reduce the total concentration of halogenated hydrocarbons in the effluent to less than 100 ppb.

6. The waste stream consists of up to 52,000 gallons per day of contaminated groundwater. The extracted groundwater is treated by air stripping prior to discharge to the storm drain system tributary to San Tomas Aquino Creek and South San Francisco Bay.

7. The Regional Board adopted a revised Water Quality Control Plan for the San Francisco Bay Region (Basin Plan) on July 21, 1982. The Basin Plan contains water quality objectives for South San Francisco Bay and discharge prohibitions discussed below.

8. The beneficial uses of South San Francisco Bay include:

   - Contact and non-contact water recreation
   - Wildlife habitat
   - Preservation of rare and endangered species
   - Estuarine habitat
   - Warm fresh water and cold fresh water habitat
   - Fish spawning and migration
   - Industrial service supply
   - Shellfishing
   - Navigation
   - Open commercial and sport fishing

9. The Basin Plan prohibits discharge of wastewater which has "particular characteristics of concern to beneficial uses" (a) "at any point in San Francisco Bay south of the Dumbarton Bridge" and (b) "at any point where the wastewater does not receive a minimum initial dilution of at least 10:1 or into any nontidal water, deadend slough, similar confined water, or any immediate tributary thereof."

10. The Basin Plan allows for exceptions to the prohibitions referred to in Finding 9 above when it can be demonstrated that a net environmental benefit can be derived as a result of the discharge.

11. Exceptions to the prohibitions referred to in Finding 9 are warranted because the discharge is an integral part of a program to cleanup contaminated groundwater and thereby produce an environmental benefit, and because receiving water concentrations are expected to be below levels that would effect beneficial uses. Should studies indicate chronic effects not currently anticipated, the Board will review the requirements of this order based upon Section B.1.e.

12. The Basin Plan prohibits discharge of "all conservative toxic and deleterious substances, above those levels which can be achieved by a program acceptable to the Board, to waters of the Basin." The discharger's groundwater extraction and treatment system and associated operation, maintenance, and monitoring plan constitutes an acceptable control program for minimizing the discharge of toxicants to waters of the State.

13. Effluent limitations of this Order are based on the Basin Plan, State Plans and Policies, and best engineering judgment.

14. The issuance of waste discharge requirements for this discharge is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code (CEQA) pursuant to Section 13389 of the California Water Code.

15. The Board has notified the discharger and interested agencies and persons of its intent to issue waste discharge requirements for the discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

16. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that the discharger, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Effluent Limitations

1. The discharge of waste containing constituents in excess of the following limits is prohibited:

Constituent	Unit	Monthly Average	Daily Maximum
Total concentration of all synthetic volatile organic compounds*	mg/l	0.100	0.200

* Defined as the following halogenated hydrocarbon compounds and associated isomers: trichloroethane, dichloroethane, trichloroethylene, dichloroethylene, tetrachloroethylene, chloroform, dichlorodifluoromethane, and freon 113.

2. The pH of the discharge shall not exceed 8.5 nor be less than 6.5.

3. In any representative set of samples, the discharge of waste shall meet the following limit of quality:

TOXICITY:

The survival of rainbow trout test fishes in 96 hour bioassays of the effluent as discharged shall be a median of 90% survival and a 90 percentile value of not less than 70 percent survival.

B. Receiving Water Limitations

1. The discharge of wastes shall not cause the following conditions to exist in waters of the State at any place:

a. Floating, suspended, or deposited macroscopic particulate matter or foam;

b. Bottom deposits or aquatic growths;

c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;

d. Visible, floating, suspended, or deposited oil or other products of petroleum origin;

e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.

2. The discharge of waste shall not cause the following limits to be exceeded in waters of the State in any place within one foot of the water surface:

a.	Dissolved oxygen:	5.0 mg/l minimum. The median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation.
b.	pH:	The pH shall not be depressed below 6.5 nor raised above 8.5, nor caused to vary from normal ambient pH levels by more than 0.5 units.
c.	Un-ionized ammonia (as N):	0.025 mg/l Annual Median 0.4 mg/l Maximum at any time

3. The discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Board or the State Water Resources Control Board as required by the Federal Water Pollution Control Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Federal Water Pollution Control Act or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

C. Provisions

1. The discharger shall comply with all sections of this order immediately upon adoption.

2. The discharger shall comply with the self-monitoring program as adopted by the Board and as may be amended by the Executive Officer.

3. This Order includes all items of the attached "Standard Provisions, Reporting Requirements and Definitions" dated April 1977 except A.5, A.12, B.2, B.5, and C.2, and C.4.

4. This Order expires June 19, 1990. The discharger must file a report of waste discharge in accordance with Title 23, Chapter 3, Subchapter 9 of the California Administrative Code not later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements.

5. This Order shall serve as a National Pollutant Discharge Elimination System Permit pursuant to Section 402 of the Clean Water Act or amendments thereto, and shall become effective 10 days after date of its adoption provided the Regional Administrator, Environmental Protection Agency, has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

I, Roger B. James, Executive Officer do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on June 19, 1985.

ROGER B. JAMES
Executive Officer

Attachments:
Standard Provisions & Reporting
Requirements, April 1977
Self-Monitoring Program

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM
FOR

APPLIED MATERIALS, INC.

3050 BOWERS AVENUE FACILITY

CITY OF SANTA CLARA, SANTA CLARA COUNTY

NPDES No. CA 0028851

ORDER NO. 85-70

CONSISTS OF

PART A, dated January 1978

AND

PART B

PART B

I. DESCRIPTION OF SAMPLING STATIONS

A. INFLUENT

Station	Description
I-1	At a point in groundwater extraction/ treatment system immediately prior to treatment.

B. EFFLUENT

Station	Description
E-1	At a point in the groundwater extraction/treatment system immediately following treatment.

C. RECEIVING WATERS

Station	Description
C-1	At a point in San Tomas Aquino Creek 100 yards but not more than 200 yards downstream from the discharge point.

II. SCHEDULE OF SAMPLING AND ANALYSIS

A. The schedule of sampling and analysis shall be that as listed in Table I.

III. MODIFICATION OF PART A, DATED JANUARY 1978

A. This monitoring program should abide by all items in Part A as appropriate, excluding the following: C.3, C.4, C.5, D.1, D.2, D.3.b, D.3.c, D.4, E, F.3.b, F.3.d, F.3.e, F.3.g.

B. Results shall be reported in a format similar to those of Table I of Appendix A, page 4 of Appendix B, Table 4 of Appendix D.

C. Laboratory results shall include analytical method used and detection limit.

IV. MISCELLANEOUS REPORTING

A. If any chemical additives are proposed to be used in the operation of the treatment system it shall be reported prior to their use.

I, Roger B. James, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this regional Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Regional Board Order No. 85-70.

2. Is effective on the date shown below.

3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger, and revisions will be ordered by the Executive Officer.

ROGER B. JAMES
Executive Officer

Effective Date June 19, 1985

TABLE 1

SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

Sampling Station	I-1	E-1	C-1									
TYPE OF SAMPLE	G	G	G									
Flow Rate (mgd)	D											
BOD, 5-day, 20°C or BOD (mg/l & kg/day)												
Chlorine Residual & Dosage (mg/l & kg/day)												
Settleable Matter (ml/l-hr. & cu. ft./day)												
Total Suspended Matter (mg/l & kg/day)		Q										
Oil and Grease (mg/l & kg/day)												
Coliform (Total or Fecal) (MPN/100 ml) per req't												
Fish Tox'y 96-hr. TL % Surv'l in undiluted waste		Y										
Ammonia Nitrogen (mg/l & kg/day)												
Nitrate Nitrogen (mg/l & kg/day)												
Nitrite Nitrogen (mg/l & kg/day)												
Total Organic Nitrogen (mg/l & kg/day)												
Total Phosphate (mg/l & kg/day)												
Turbidity (Jackson Turbidity Unit)												
pH (units)	M	M	2/Y									
Dissolved Oxygen (mg/l and % Saturation)		2/Y	2/Y									
Temperature (°C)		Q										
Apparent Color (color units)												
Secchi Disc (inches)												
Sulfides(if DO <5.0 mg/l) Total & Dissolved (mg/l)												
Arsenic (mg/l & kg/day)												
Cadmium (mg/l & kg/day)												
Chromium, Total (mg/l & kg/day)												
Copper (mg/l & kg/day)												
Cyanide (mg/l & kg/day)												
Silver (mg/l & kg/day)												
Lead (mg/l & kg/day)												

TABLE 1 (continued)

SCHEDULE FO SAMPLING, MEASUREMENTS, AND ANALYSIS

Sampling Station	I-1	E-1	C-1									
TYPE OF SAMPLE	G	G	G									
Mercury (mg/l & kg/day)												
Nickel (mg/l & kg/day)												
Zinc mg/l & kg/day)												
Phenolic Compounds (mg/l & kg/day)												
All Applicable Standard Observsations												
Bottom Sediment Analyses and Observations												
Tot. Ident. Chlori. Hydro-carbons (mg/l & kg/day)(1)	W/M	W/M	3/Y									
GC/MS Scan (EPA Method 624/625)		2/Y										

LEGEND FOR TABLE

TYPES OF SAMPLES

C = grab sample
C-24 = composite sample - 24-hour
C-X = composite sample - X hours (used when discharge does not continue for 24-hour period)
Cont = continuous sampling
DI = depth-intergrated sample
BS = bottom sediment sample
O = observation

TYPES OF STATIONS

I = intake and/or water supply stations
A = treatment facility influent stations
E = waste effluent stations
C = receiving water stations
P = treatment facilities perimeter stations
L = basin and/or pond levee stations
B = bottom sediment stations
G = groundwater stations

FREQUENCY OF SAMPLING

E = each occurence
H = once each hour
D = once each day
W = once each week
M = once each month
Y = once each year

2/H = twice per hour
2/W = 2 days per week
5/W = 5 days per week
2/M = 2 days per month
2/Y = once in March and once in September
Q = quarterly, once in March, June, Sept. and December

2H = every 2 hours
2D = every 2 days
2W = every 2 weeks
3M = every 3 months
Cont = continuous

Footnotes for Table I
(Schedule for Sampling, Measurements, and Analysis)

(1) To be sampled and analyzed weekly for the first month, and once monthly thereafter. Total identifiable chlorinated hydrocarbons are defined as trichloroethane, dichloroethane, trichloroethylene, dichloroethylene, tetrachloroethylene, chloroform, dichlorodifluoromethane, and Freon 113.